

SPOKED WHEEL SPINNER WITH MOTIONLESS CAP

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TECHNICAL FIELD

10 The invention generally pertains to wheel spoke spinners, and more specifically to a rotating spoked wheel spinner having a motionless cap that partially covers the rotating spinner.

BACKGROUND ART

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Previously, wheel spinners have been used on vehicles such as automobiles, SUV's and trucks to provide a novel visual effect of a wheel spinning at different speeds than the wheel and to continue to spin when the vehicle has stopped.

20 A search of the prior art did not disclose any patents that read directly on the claims of the instant invention, however the following U.S. patents are considered related:

	<u>Patent Number</u>	<u>Inventor</u>	<u>Issue Date</u>
25	6,045,195	Okamoto	Apr. 4, 2000
	6,120,104	Okamoto	Sep. 19, 2000
	6,554,370	Fowlkes	Apr. 29, 2003

30 Okamoto in U.S. patent 6,045,195 teaches a wheel cover with a fixable side fixture mounted to the center of a wheel of a vehicle to cover a central section. A movable side fixture is pivotally mounted to the central section of the fixable side through a bearing, and a wheel cover body in the shape of a disc prevents integral rotation with

the vehicle wheel. A dynamo is mounted on the wheel cover that generates electrical current when the vehicle wheel is in motion.

Patent No. 6,120,104 issued to Okamoto is for a wheel cover with a fixable side member mounted to the center of a wheel of a vehicle to cover a central section. A
5 movable side member is pivotally mounted to the central section of the fixable side through a bearing and a wheel cover body in the shape of a disc prevents integral rotation with the vehicle wheel. The wheel cover body does not rotate with the vehicle wheel, thus permitting a design drawn onto the wheel cover body to be seen when the vehicle wheel is rotating.

10 Fowlkes in U.S. patent 6,554,370 discloses a wheel spinner assembly that is mounted onto the wheel of a vehicle. The invention has a wheel mount supported by the wheel and connected to a spinner mount with a bearing. A spinner is supported by the bearing, thereby permitting the spinner to rotate independently relative to the wheel when it is in motion.

DISCLOSURE OF THE INVENTION

20 The development of spoked wheel spinners is relatively new and has been limited to a single spinner attached to a vehicle wheel that rotates at a different speed than the wheel and continues to rotate when the vehicle stops.

Therefore, the primary object of the invention is to improve on this approach by adding a motionless cap in the center of the wheel that essentially stays immobile and
25 provides an additional novel visual effect. The motionless cap is domed in shape and is positioned very close to the blades of the spinner, which adds to the attractiveness and distinction of the wheel. While the cap is basically motionless there are some moments that a slight movement is perceived, such as during sudden stops and starts, which may cause the cap to rotate slightly until a counter weight dampens the swinging movement.

This movement is not objectionable however, as when the vehicle is moving, the movement is hardly perceived and yet it can also create a secondary novel visual effect.

An important object of the invention is the use of a cover having indicia that is located in the center of the cap. The cover is removable and permits a myriad of different indicia to be applied to its outer surface, such as names, symbols, scenes, slogans, designs, images or decorations. Unlike hub caps on conventional vehicle wheels, the cap with its cover is always in a readable position, even when the vehicle is moving which permits a passerby to see the indicia on the cover in the center of the wheel which is indeed unique to this improvement invention.

Another object of the invention permits the spoked spinner to function in the usual manner, which is that when the wheel rotates, the spinner rotates, but not necessarily at the same speed as the wheel, due to the friction of the bearings. When the vehicle stops, the spoked spinner continues to rotate for a few moments, imparted by the inertia of the mass, however the cap always stays relatively motionless.

Still another object of the invention is that the spoked spinner may be utilized with most common wheels in use on today's vehicles such as alloy wheels or conventional steel wheels having a myriad of different wheel covers.

These and other objects and advantages of the present invention will become apparent from the subsequent detailed description of the preferred embodiment and the appended claims taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIGURE 1 is a partial isometric view of the preferred embodiment mounted on an automotive wheel.

FIGURE 2 is a front elevation view of a typical alloy automotive wheel to which the invention may be installed.

FIGURE 3 is a side elevation view of the automotive wheel as shown in FIGURE 2.

FIGURE 4 is a cross-sectional view of the preferred embodiment taken along an arbitrary centerline.

FIGURE 5 is a partial isometric view of the adapter plate of the preferred embodiment shown removed from the invention for clarity.

FIGURE 6 is a partial isometric view of the bladed spinner of the preferred embodiment shown removed from the invention for clarity.

FIGURE 7 is a partial isometric view of the motionless cap of the preferred embodiment with a section cut away to illustrate the counter-weight. The cap is shown removed from the invention for clarity.

FIGURE 8 is a partial isometric view of the cover having indicia of the preferred embodiment shown removed from the invention for clarity.

FIGURE 9 is a partial isometric view of the spinner shaft of the preferred embodiment shown removed from the invention for clarity.

FIGURE 10 is a partial isometric view of the cap bearing retainer of the preferred embodiment shown removed from the invention for clarity.

FIGURE 11 is an exploded cross-section of the preferred embodiment.

BEST MODE FOR CARRYING OUT THE INVENTION

The best mode for carrying out the invention for a spoked wheel spinner 20 for an automotive wheel 22 having a non-rotating cap is presented in terms of a preferred

embodiment. This preferred embodiment, as shown in FIGURES 1 through 11, is comprised of an adapter plate 24 for mounting onto an automotive wheel. The adapter plate 24, as illustrated by itself in FIGURE 5 and assembled invention in FIGURES 4 and 11, is round in shape with a plurality of countersunk holes 25 configured to accommodate automotive lug studs, which are basically standard in the automotive industry. The adapter plate 24 is preferably formed of a material such as die cast zinc, cast aluminum or cast iron, and may be machined to include the countersunk holes 25 on a conventional bolt circle. The adapter plate 24 is attached to the automotive wheel 22 with lug nuts, and the invention is easily adapted for use with either alloy wheels or steel wheels having wheel covers.

A spinner bearing 26 is pressed into, or similarly retained with a spinner bearing snap ring 28 within the adapter plate 24, as illustrated in FIGURE 4. The spinner bearing 26 includes an outer race 26' and an inner race 26", and is preferably the ball bearing type, which is well known in the art and in common usage.

A spinner shaft 30 is retained within the bearing inner race 26" preferably with a pressed fit, as illustrated in FIGURE 4. The shaft 30 is shown by itself in FIGURE 9 and consists of a round rod with a first end having an external thread 32, a raised thread 34 in a middle portion, and a internal tapped hole 36 on a second end. The major portion of the shaft 30 protrudes outward from the spinner bearing 26, away from the automotive wheel 22.

A bladed spinner 38 is attached onto the spinner shaft 30 by either a press fit or a slip fit and interfaces with the inner race 26" of the spinner bearing 26, as illustrated in FIGURE 4. The bladed spinner 38 preferably has an outer diameter that is essentially the same diameter as an inner surface of an automotive wheel rim to which the bladed spinner 38 is attached. This arrangement permits the bladed spinner to rotate freely, independent of the automotive wheel which creates a visually perceived aberration of different rotational speeds of the wheel 22.

The bladed spinner 38 is configured to include a number of separate blades 40 that form spokes, which are shaped to correspond with and enhance the configuration of the

wheel 22. The bladed spinner 38 is depicted alone in FIGURE 6 and as assembled in FIGURES 1, 2, 4 and 11. It should be noted that the configuration depicted in the drawings is only representative, as other shapes and styles may be easily used with simplicity and dispatch. The bladed spinner 38 may be formed of a material such as cast aluminum, thermoplastic, fiberglass, carbon fiber or the like. In order to retain the bladed spinner 38 on the shaft 30, a shaft nut 42 with a shaft washer 46 is threadably disposed on the external thread 32 on the first end of the spinner shaft 30. A spinner jam nut 44 with a spinner washer 48 is attached to the raised threads 34 in a middle portion of the spinner shaft 30 in order to compress the bladed spinner 38 against the inner race 26'' of the spinner bearing 26, as shown pictorially in FIGURE 4.

A ball bearing type cap bearing 50, having an outer race 50' and an inner race 50'', is attached to a motionless cap 52 with a cap bearing snap ring 54 intersecting with the outer race 50'. The cap bearing inner race 50'' is positioned on the second, or protruding end, of the spinner shaft 30. A cap bearing retainer 56 contiguously engages the second end of the shaft 30 that also interfaces with the inner race 50'' of the cap bearing 50, with a cap bearing retainer screw 58 holding the cap 52 firmly in place.

The motionless cap 52 includes a counter-weight 60 on a bottom inner surface, such that when the automotive wheel 22 is rotating, the cap 52 remains in a relatively fixed position without movement as the counter-weight 60 on the bottom surface essentially prevents the cap 52 from rotating. The cap 52 preferably has a domed, semi-elliptical shape with a distal edge located adjacent to the bladed spinner 38, and includes a plurality of apertures 62 for attachment purposes.

A cover 64 having indicia is attached to the cap 52 through apertures 62 such that the cover 64 may be easily removed and replaced. The cover 64 has the same shape as the cap 52 except that it is smaller in diameter and has tabs 66 on the inner surface that engage the apertures 62 to hold the cover 64 tightly against the cap 52, as shown in FIGURE 4. The cover 64 may have any type of indicia such as names, symbols, scenes, slogans, designs, images and decorations.

Once the spoked wheel spinner 20 is installed on the wheel, the operation is automatic, when the wheel 22 rotates with the vehicle moving, the spinner rotates but not necessarily at the same speed as the wheel due to the friction of the spinner bearings 26 and the cap bearing 50. When the vehicle stops, the bladed spinner 38 continues to rotate
5 for a few moments due to the inertia of the mass, however the cap 52 always stays relatively motionless.

While the invention has been described in complete detail and pictorially shown in the accompanying drawings, it is not to be limited to such details, since many changes and modifications may be made to the invention without departing from the spirit and
10 scope thereof. Hence, it is described to cover any and all modifications and forms which may come within the language and scope of the appended claims.